

**REMARKS/ARGUMENTS**

Claims 1-15, 18-22 and 29-35 remain in this application. Claims 16, 17, 23-28 and 36-39 have been canceled.

The Abstract of the Disclosure has been shortened as requested by the Examiner.

Replacement figures 1 and 3 are enclosed, as requested by the Examiner.

The Examiner has raised a restriction requirement in regard to the newly added claims. In response to this rejection requirement, applicants have canceled the newly added claims.

Antecedent support for the limitation "physical object" added to the claims is found on page 2, line 26.

The Examiner has rejected Claims 1-12, 14, 18-20 and 29 as being unpatentable over Hara in view of Faghri. Applicants respectfully traverse this rejection.

Referring to Hara, there is disclosed a group robot system, and sensing robots and base station used therefor. Hara teaches a group robot system in which a number of robots operate collectively. See column 1, lines 8-10. Hara teaches the group robot the system consists of a base station, a plurality of fluttering sensing robots and a plurality of fluttering pheromone robots, as shown in figure 1. Figure 7 shows the relationship between the position and hierarchical structure in communication between each of the sensing robots and between the sensing robot and the base station in the group robot system. See column 12, lines 54-64.

Claim 1 of applicants has the limitation that "each of the N vehicles unaware of their respective position and orientation and not in communication with each other". Hara does not teach or suggest this limitation. Hara requires that the plurality of robots have a hierarchical structure and are in communication with each other. In fact, because Hara requires that the plurality of robots are in communication with each other, Hara teaches away from applicants' claimed invention where the vehicles are not in communication with each other.

Referring to Faghri, there is disclosed a computer implemented system and method for simulating motor vehicle and bicycle traffic. Since Faghri is completely directed to a computer implemented system and method, there are absolutely no physical objects, as found in amended Claim 1. It is respectfully submitted that Faghri has nothing to do with applicants' claimed invention, as amended. A computer simulation of motor vehicles has nothing to do with the manipulation or control of physical objects.

Furthermore, Claim 1 of applicants has the limitation that each of the N objects is unaware of their respective position and orientation and not in communication with each other. Faghri specifically teaches that the simulation uses a motor vehicle following model. Specifically, in car following situations, the behavior of vehicles as they follow one another is applied. The response of a driver seems to be affected by the relative speed of his car and the one ahead. Thus, the relative speed corresponds to the stimulus in the function. The driver sensitivity is inversely proportional to the distance headway. The model in Faghri uses the equation on column 8, line 15. See column 7, line 65-column 8, line 30. Accordingly, not only does Faghri fail to teach or suggest, and really has nothing at all to do with physical objects, but Faghri also does not teach or suggest each of the N objects unaware of their respective position and orientation and not in communication with each other., since the car following model requires a given vehicle being communication with a vehicle immediately had of it.

Accordingly, Faghri in view of Hara does not teach or suggest the limitation in Claim 1 of "N physical objects . . . each of the N is objects unaware of their respective position and orientation and not in communication with each other"; and Claim 1 is patentable.

Claims 2-9 and 29 are dependent to parent Claim 1 and are patentable for the reasons Claim 1 is patentable.

Claim 10 is patentable for the reasons Claim 1 is patentable. Claim 11 is dependent to parent Claim 10 and is patentable for the reasons Claim 10 is patentable.

Claim 12 is patentable for the reasons Claim 1 is patentable. Furthermore, the LEDs of Hara are for visible illumination of other objects (e.g. detecting an intruding human) not for sensing the location of robots. See column 39, lines 20-27 and column 41, lines 30-45.

Claim 14 is patentable for the reasons Claim 1 and Claim 12 are patentable.

Claim 18 is patentable for the reasons Claim 1 is patentable and Claim 12 is patentable.

Claims 19 and 20 are dependent to parent Claim 18 and are patentable for the reasons Claim 18 is patentable.

The Examiner has rejected Claims 13, 15, 22 and 30-35 as being unpatentable over Hara in view of Faghri and further in view of Storlie. Applicants respectfully traverse this rejection.

Referring to Storlie, there is disclosed a media edge sensor utilizing a laser beam scanner. Storlie teaches a laser printer 10 which includes a laser scanner mechanism 12. A media sheet 18 (paper) is propelled along imprinting pathway 16 by rollers 20 and 22. A scanned beam 23 from

laser scanner mechanism 12 contains modulation information for imprinting images on paper 18. See column 2, lines 54-63.

Storlie teaches that optical sensors 40 and 42 are positioned beneath media sheet 18 when it is positioned and in printing path 16. Optical sensors 40 and 42 are only partially shaded by sheet 18 and provide signals indicative of the incidence of beams 36 and 38, respectively, to a microprocessor 44. In essence, each of optical sensors 40 and 42 provide a high output to microprocessor 44 during the time the beams 36 and 38 are respectively incident thereon. By measuring the pulse lengths of the outputs with optical sensors 40 and 42, microprocessor 44 can determine the width of a media sheet 18 and whether it is off set from the center line of imprinting path 16. See column 3, lines 15-28.

Claim 13 has the limitation of "a planar element on which the N objects are disposed, and wherein the sensing means includes at least two 1-D sensors that sense the light emitted from the edge of the planar element on which the objects are disposed". It is respectfully submitted by applicants that the only planar element that Storlie teaches is a piece of paper. There is no teaching or suggestion that anything is disposed on this piece of paper. Storlie is teaching a scanner and specifically how to impart an image onto the piece of paper. The light that is taught by Storlie is not emitted from the edge of the planar element, but from a laser 26 that is separate and apart from the piece of paper, as is easily seen in figure 2 and 3. This light is used for an alignment of the piece of paper, that is the alignment of the planar element. Accordingly, Storlie does not teach a planar element upon which the objects are disposed, nor does Storlie teach to sense light emitted from the edge of the planer element. Furthermore, Storlie does not teach or suggest each object having an emitter which emits a light, each of the N objects unaware of their respective position and orientation and not in communication with each other, as found in Claim 12. Accordingly, Storlie does not add anything to the teachings of Faghri and Storlie in relevant

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part to arrive at Claim 12 of applicants. Claim 13 is dependent to parent Claim 12 and is patentable for the reasons Claim 12 is patentable, as well as for the reasons explained above.

Claim 14 is patentable for the reasons Claim 12 is patentable. Claim 15 is dependent to parent Claim 14 and is patentable for the reasons Claim 14 and 13 are patentable.

Claim 18 is patentable for the reasons Claim 12 is patentable. Claim 22 is dependent to parent Claim 18 and is patentable for the reasons Claim 13 and Claim 18 are patentable.

Claims 30 and 31 are dependent to Claim 22 and are patentable for the reasons Claim 22 are patentable.

Claims 32 and 33 are dependent to parent Claim 13 and are patentable for the reasons Claim 13 is patentable.

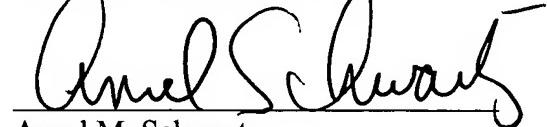
Claims 34 and 35 are dependent to parent Claim 15 and are patentable for the reasons Claim 15 is patentable.

The Examiner has rejected Claim 21 as being unpatentable over Hara in view of Faghri and further in view of Kanayama. Applicants respectfully traverse this rejection. The only reason the Examiner has cited Kanayama is supposedly because it teaches vehicles capable of holonomic motion. However, Kanayama does not add anything to the teachings of Faghri and Hara to arrive at the limitations of Claim 18. Claim 21 is dependent to parent Claim 18 and is patentable for the reasons Claim 18 is patentable.

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In view of the foregoing amendments and remarks, it is respectfully requested that the outstanding rejections and objections to this application be reconsidered and withdrawn, and Claims 1-15, 18-22 and 29-35, now in this application be allowed.

Respectfully submitted,



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